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Self-Service: An Essential Capability Of BI

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Executive Summary

There are major forces at play that are changing how business operates: Business processes are becoming more integrated and complex, economic pressures are forcing companies to do more with less, and the amount of information available is becoming more overwhelming. To meet these changing conditions, companies of all sizes are progressively more dependent on increasing the productivity of knowledge workers. However, the workflows, tool sets, and skills that these knowledge workers are using are more grounded in Industrial Revolution-era thinking and have not been modernized to adapt to the business realities of today. As a result, many of these workers are at a breaking point, spending more and more time looking through and sorting information and less time adding value to it.

This current state creates a potentially tremendous opportunity for breakthrough productivity gains for companies that confront this rising time of information chaos. To test this hypothesis, in September 2009, SAP commissioned Forrester Consulting to evaluate the information usage requirements, patterns, and challenges of modern knowledge workers. In conducting 30 in-depth interviews with 24 business and six IT professionals across multiple industries, Forrester found that these companies — across industries, geographies, and roles — heavily depend on all types of information for operational, tactical, and strategic decision-making. Even though the study was conducted more than a year ago, all subsequent Forrester research conducted throughout 2010 and 2011 — summarized in Forrester’s March 31, 2011, “Trends 2011 And Beyond: Business Intelligence” research report, as well as Forrester’s Forrsights Software Survey, Q4 2010 — confirm that the study findings are even more applicable today.¹

Regardless of the company size, industry, the function, or the geography, Forrester found that information brokers all share similar characteristics. They use information from a variety of different sources both internally and externally, finding the right information for their specific need, which takes a lot of time. And when they do find it, they have to wade through a lot to find exactly what they are looking for, and they all feel that getting the right information to do their job is getting harder each year. Across Forrester’s interview sample, everyone wants to spend more time applying their own unique genius to the information to create value for their company. But being caught between the proverbial rock (greater workloads and more pressure to produce results) and hard place (the increased amount of time they spend looking for information), they are finding that they are seeing their work weeks extend or realizing that there are valuable activities they could be doing with the information, if they only had the time.

But it’s not all bad news: business intelligence (BI) to the rescue! Forrester defines BI as *a set of methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information used to enable more effective strategic, tactical, and operational insights and decision-making*. But often BI infrastructure and applications — implemented in an attempt to aid these knowledge workers — become complex and expensive, and many Forrester clients tell us that they depend too heavily on IT for most BI needs. The world, however, does not stand still, and business often cannot wait until someone from IT develops a new report — they need it now! As a result, Forrester has seen an emergence of self-service or so called lean and agile BI tools that business users procure, install, and use with significantly reduced need for support from IT than earlier generation BI tools and applications.

Key Findings

Forrester’s study yielded three key findings:

- There are several different groups of knowledge workers embedded within different organizational departments that are increasingly relying on themselves — as IT organizations become leaner — for most of their information needs.
- In most cases, information needs for these knowledge workers are not fully addressed by earlier-generation BI applications. Some of the features missing in the earlier generation BI applications are an intuitive, search-like interface and semantic metalayers that require little to no training for business users.
- These knowledge workers will significantly benefit from self-service (lean and agile) BI solutions that would allow these office workers to fulfill most of their information requirements while requiring minimal support from IT.

The Roles, Drivers, And Challenges Of Information Workers In Today's Knowledge Economy

We live in a knowledge economy, and it is no longer sufficient for only senior management to have all the information. Competition is shortening business-cycle lengths, forcing businesses to be more agile and thus pushing more decision-making responsibility to all, including those in the lower levels of the company. Many firms, especially SMBs, cannot afford to invest in enterprise BI systems to properly equip lower-level office workers but still need these employees to be more productive to respond to market forces. These employees are overwhelmed with the explosion and constant stream of information and are finding less and less time to dedicate to information gathering.

As a result, Forrester sees growing interest in strategies to help businesspeople reduce the amount of time they spend sorting through mountains of data so that they can in turn spend more time analyzing and making decisions instead. Why? The commoditization of many products and services as well as the increasing size and complexity of business operations represent some of the main catalysts for this upward BI trajectory. Improved insight and smarter and faster decisions continue to remain increasingly important competitive differentiators. Other key catalysts for this persistent and growing BI trend include:

- Increasing data and content volumes.
- Increasingly complex regulatory and general reporting requirements.
- Growing, increasingly complex business operations.
- Hunger for more insight about internal and external processes.

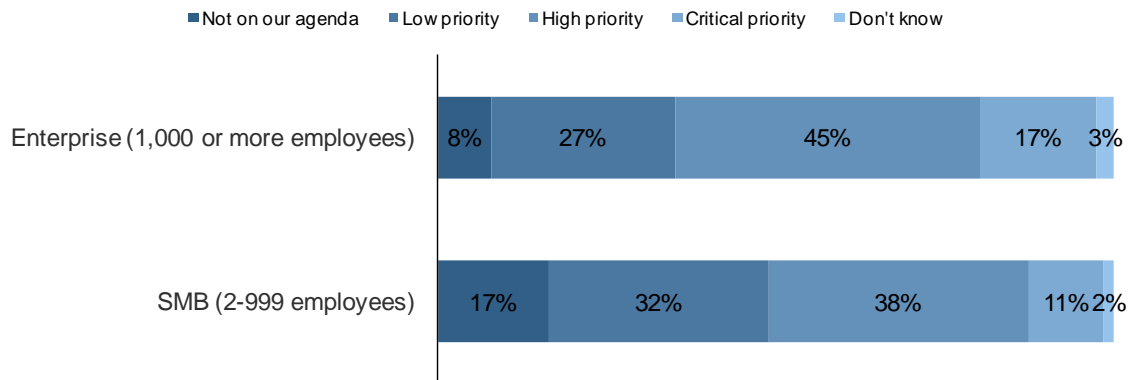
For many large and SMB companies, BI remains and will continue to be the “last frontier” of competitive differentiation (see Figure 1 and Figure 2).

Figure 1

BI Is High On The Enterprise Priority List; SMBs Do Not Fall Too Far Behind

“Which of the following initiatives are likely to be your IT organization's top software priorities over the next 12 months?”

Increase our use of business intelligence and decision-support tools and services



Base: 2,124 software decision-makers

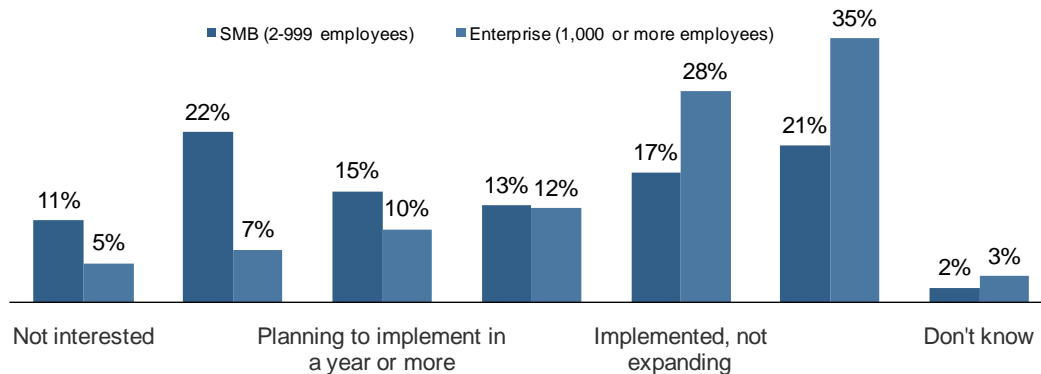
Source: Forrsights Software Survey, Q4 2010

Figure 2

Many Enterprises Have Already Implemented BI; SMBs Will Ride The Next Wave

“What are your firm's plans to adopt the following information and knowledge management software technologies?”

Business intelligence software



Base: 934 software decision-makers
(percentages may not total 100 because of rounding)

Source: Forrsights Software Survey, Q4 2010

Patterns Of Knowledge Workers Within Different Lines Of Business

“Knowledge worker” is a good label for a class of business users of information, but it’s also an abstract term. No sales operations professional, product marketer, or business financial analyst would self-identity with the term, nor are there many organizations that have created functions whose job it is to maximize knowledge worker productivity. However, the fact of the matter remains that people who use information are spending more time looking for the right data and content and less time applying their individual genius to that data to add value for the business

To bring the abstract concept of “knowledge worker” to life for the executives who would be the benefactors of increased productivity, Forrester interviewed 30 professionals in multiple industries to evaluate information usage requirements, patterns, and challenges of modern office workers. Survey participants included decision-makers in sales, marketing, finance, and IT roles: 24 business and six IT professionals. Forrester focused on the specific job functions of those who are:

- Heavy users of information in their day-to-day activities.
- At a level where they’re able to offer significant business impact, but they’re not senior enough to have a staff of their own business analysts.
- Not in a position to access unlimited IT resources on a daily basis for various economic, organizational, and other reasons.

In general, regardless of their function, the majority of these professionals waste a tremendous amount of their time trying to find and sort through the information they need to do their jobs.

The Forrester study also found that the traditional lines of demarcation between information producers and consumers are blurred today. Knowledge workers now mostly operate as both information consumers and producers and often don’t require help from IT to set up analytical engines or models. In other words, one knowledge worker’s value-added output is another’s data input. They can perform the work themselves, they just need help: organizing all of their information feeds, sorting through the information to locate the nuggets of data they are looking for, and getting that information in a format such that they can better work with it in their spreadsheets.

Clearly, there are common threads across all interviewees that indicate the potential of a lean and agile approach to providing knowledge workers with more self-service business intelligence capabilities.

Additionally, Forrester concentrated on researching and uncovering the specific use cases that are not already fully addressed by earlier-generation BI tools. Use cases stand out when:

- **A businessperson has little time for IT.** What are the types of analyses, queries, or answers that a businessperson might execute by himself rather than asking IT for help? For example, a businessperson is not going to write a complex report, like a customer/billing statement, but she will probably want to analyze sales trends by region, by product, and by time period on her own with little or no IT help. Typically these are information and analysis needs that change on a daily and/or weekly basis, so IT often cannot keep up with requests.
- **A businessperson is not sure where and how to get started.** There many times when a knowledge worker doesn’t have a specific question in mind when an inquiry process is started. A good example is when the object of

analysis has many “dimensions”. “Dimension” is a descriptive (non-numeric, non-additive) attribute, such as region, time, business unit, etc. If such an object, for instance, is a checking account transaction that has only a few dimensions, one would have a pretty good idea where to start the exploration. But on the other hand, if the object is much more complex, such as a patient in a drug trial, who has hundreds of dimensions, it is often hard to pinpoint exactly where one should start the exploration.

With these criteria in mind, Forrester study uncovered the following opportunities and use cases.

Business Opportunities For Sales Departments

The Forrester study focused mostly on three types of functions within a sales organization:

- **Sales operations professionals** perform most of the major analytics of sales performance and are typically the liaisons between sales and IT.
- **Sales managers** are responsible for managing the performance of their team while also reporting progress and trends to their management.
- **An individual contributor** who manages large relationships is a person who manages the business relationship with a large account and works with a lot of operational information across both businesses.

From the perspective of working with information, how difficult finding and using information is, and the support each are getting from IT, virtually all shared the same opinion: “This is really hard, and we’re getting only little help.” Perhaps even more interesting, the patterns were very similar across the industries interviewed: financial services, consumer electronic goods, automotive manufacturing, medical equipment manufacturers, and consumer packaged goods. Respondents were all very enthusiastic and quick to identify with the benefits they would receive with a self-service BI platform. One institutional investor sales manager in London said, “It’s huge — we’d be able to cut out about 3 hours out of our pitch deck development process, which would mean that each salesperson could present to one more client each day.”

Business Opportunities For Marketing Departments

Depending on the business (consumer goods, retailers, business to business, etc.) the role of the marketing organization varies greatly. In some cases, it drives the whole business, in others, it supports the business. In either case, practically every marketing leader is under pressure to show a link between what they spend and the business impact of the investment. Today, all marketing organizations are collecting all kinds of metrics and data, but most still struggle to connect the dots between the information collected and real business value. This condition permeates from chief marketing officer down throughout the whole organization. Some of the market roles surveyed in the report include:

- **Campaign managers** are responsible for promotional activities to help drive interest and sales.
- **Product marketing managers** are responsible for creating the business plan for a given product set and increasing its market share.
- **Pricing managers** are responsible for creating effective pricing strategies for the company’s products and services.

As one CMO of a large global pharmaceutical company put it, “If I want a seat at the table, I have to show linkage to business results. If I want to keep it, my people have to be able to do the same.” To understand the information challenges faced at levels below the C-suite, we focused our efforts on interviewing product managers, product line marketing managers, and campaign managers. Across the board, regardless of role or industry, everyone interviewed was focused on showing some sort of connection between what they do and how it adds value to the business.

Business Opportunities For Finance Departments

Finance organizations are under tremendous pressure, especially in the current tough economic climate. The credit crunch has created a lot of focus on the treasury and the fact that more ongoing operations are being financed through income, rather than credit, is a major change. This has a ripple effect on all budgeting and cost models, forcing a lot of change across the enterprise. While companies have removed the big cost items off the balance sheet, CFOs are extremely focused on wringing inefficiency out of the business and recognize that these savings come from looking into processes and finding redundancies across functions. One CFO of a large technology firm told us, “I think we could cut a major chunk out of marketing’s budget, I just don’t know which chunk to cut.” With tight cost controls and a focus to find cost savings, many different roles are being encouraged to find new ways to wring costs out of the business.

- **Auditors** review contracts, policies, or security information to identify anomalies with payments, government regulations, or internal procedures.
- **Business analysts** work within finance to review business functions, budgets, and costs to identify areas for productivity enhancement.
- **Business liaisons** are the finance executive assigned to a business unit or department who assists those groups in budgeting or other business processes while working with corporate finance to coordinate polices, spending, and reporting.

In speaking to these roles, Forrester found similar patterns. These businesspeople are certainly finding big savings opportunities across the matrix, but the level of effort to collect the information to perform the analysis is extremely difficult. In some cases, it can take days to find all of the right information to analysis a cross-functional process.

Barriers To Unlocking Maximum Knowledge Worker Value

Unfortunately, as the demand for pervasive and comprehensive BI applications continues to increase, the complexity, cost, and effort of BI implementations increases as well. As a result, great examples of successful BI implementations among Forrester’s clients are typically outnumbered by underperforming BI infrastructure and applications.

Challenges Of Earlier-Generation BI Approaches

There are plenty of reasons for these less-than-stellar BI implementations — mostly business reasons, such as lack of top-down mandate and sponsorship, clear business ownership of information, proper data governance organization and processes, and conflicting line-of-business (LOB) and front-/back-office priorities. Enterprise architects, developers, and BI vendors share their portion of the blame with complex architectures, heavy product footprints, a high degree of customization and integration requirements, and long wait times between tangible deliverables.

While there are numerous best practices to aid organizations in designing, architecting, and implementing successful BI environment and applications, enabling end-user self-service is potentially one of the most powerful successful BI enablers. Why? Unlike its operational applications cousins like enterprise resource planning (ERP), customer relationship management (CRM), and supply chain management (SCM), requirements for BI applications are notoriously difficult to specify upfront for many reasons:

- **Ever-changing business requirements.** New business opportunities, new regulations, and unanticipated challenges spring up unexpectedly all the time. By the time a typical BI application is specified, designed, architected, built, tested, and rolled out, the world has gone and changed on us. For example, in the financial services industry, the BASEL II methodology for economic capital calculation (and analyzing the implication of changes) may change on a daily or weekly basis. Time and time again, Forrester sees examples where the majority of the requirements for reporting and analysis (often as much as 80% or 90%) come only after a BI application is implemented and rolled out.
- **Need to explore before defining requirements.** Additionally, in many situations, business stakeholders need to “explore” the data first to find connections, analyzing it to determine relevancy and meaning, so they can’t really tell IT specifically what they are looking for. This often leads to a vicious circle of “tell me what you need” versus “show me what you have and I’ll pick and choose.”
- **Who is doing the analysis?** Regular knowledge workers, like salespeople, look for information that will spark an idea or find a problem; they’re not really looking for a report, just some ideas. Whereas a power user — someone in a sales operations role, for example — has a goal to use the information as part of a value-added process and make something more valuable for the rest of the organization. Often IT will take this as lack of direction (or as a sign that the business doesn’t know what it wants from them) — but this is really an issue where most business users have an idea of what they’d like to be able to do but can only describe it based on their work experiences (which IT cannot relate to) while IT is looking for more specific requirements (which businesspeople cannot relate to).
- **Incomplete, isolated solutions.** Two components of BI — searching and reporting/analyzing — are addressed by different, often disconnected technologies. Office workers spend too much time looking for information and not enough time using it. In the current study, Forrester found that out of the total time during the day when office workers leverage information to make decisions, they spend 42% of the time looking for information, and just 58% of the time using (reporting, analyzing, acting) the information.
- **BI is not easy.** Forrester constantly hears from our clients that traditional BI applications are not very intuitive and easy to use for nontechnical office workers. As a result, and for many other reasons, office workers rely heavily on IT to deliver BI functionality and enhancements or resort to homegrown, non-enterprise-standard BI applications.
- **BI does not address information “black holes”.** One of the biggest challenges of traditional BI application is addressing the “I don’t know what I don’t know” question. Since every report and every query has to start with a specific question, asking the right question becomes key to getting the right answer. And one never knows whether one has asked the right question.

As a result, Forrester finds that most of the nontechnical office workers rely on self-built BI applications, like spreadsheets. In this study, 88% responded that they relied exclusively or heavily on spreadsheets for their reporting and analysis needs

Issues With Typical Homegrown BI Applications

To address their dire need to get answers to new questions when and where they need it, some business users turn back to good old spreadsheet tools for analysis or procure and implement low-cost BI tools bypassing corporate procurement and IT standards. While you can't blame them for going this route — after all, business is business and you can't wait for IT to provide answers in untimely manner or you may lose that deal — such an approach creates multiple issues. These are obvious, as these homegrown BI applications:

- Often drive additional support requirements in the long run.
- May violate the single-version-of-the-truth objectives for which every enterprise strives.
- Do not leverage existing BI vendor investments.
- Inevitably increase operational risk.
- Do not seamlessly address requirements for searching, looking for information, and reporting/analyzing.

The Result? Disconnect. Lost In Translation.

The bottom line is that traditional planning and preparation approaches do not work here. This “build it and they will come” scenario does not lend itself nicely to traditional IT support, and so enabling end user self-service for the majority of new reporting and analysis requirements — such as “react versus plan” approach — is key. Alas, typical homegrown BI applications are also not the ultimate answer for many reasons discussed earlier in this study.

Therefore, this is the crux of the eternal tug of war between business and IT: Business is tasked with reacting to events and adapting to new requirements, while IT is tasked with planning for controlled, standardized, secure, and optimized infrastructure and applications. These two often diametrically opposing forces are creating a rift in what otherwise could be smoothly flowing BI processes. This rift is fostering an age-old problem of business and IT struggling to find alignment. Many business leaders feel that IT stays in a comfort zone of efficiency and productivity gains in back-office operations rather than actually enabling adaptability, innovation, and ultimately a strong competitive position that drives growth and profitability. But this rift and lack of business/IT alignment also creates an opportunity.

Study Conclusions And Recommendations

Is there a happy medium between end users' needs for self-service and the IT charter to provide control, security, centralization, and optimization of BI environments? In this study, Forrester explored what the business and IT features and requirements for such a solution should be.

Business Requirements

From a business user point of view, such a solution should provide self-service functionality such as:

- Run and lightly customize canned reports and dashboards.
- Run ad hoc queries.
- Add calculated measures to existing reports.
- Collaborate with other users.
- Fulfill their BI requirements with little or no training.

What BI tool features do enterprises need to support such BI requirements?

- **Portals are key enablers of BI collaboration and knowledge management.** By adding collaboration capabilities to BI applications, portals also serve as a knowledge management platform for BI and other enterprise applications. IT organizations very often end up building thousands of canned, standard, production BI reports. Unless you know what's out there and where to find it, these reports may end up just idly sitting there, wasting valuable IT resources. Portals can help address this challenge with personalized folders and menu structures, as well as a search engine to search for reports across multiple BI tools and applications.
- **A semantic layer isolates business users from database management system (DBMS) complexities.** This is especially critical for ad hoc queries, where rather than starting with a canned report, one starts with a blank slate and needs to build a query from scratch. Understanding the complexities of underlying database structures, often with cryptic and meaningless table and column names, confusing aliases, and little to no correlation to the business question, the business problem at hand is definitely not a task a casual BI business user can tackle. That's why most (but not all) modern BI tools put business metadata — or a semantic layer — between a BI tool and the underlying raw DBMS structure. If you have multiple BI tools, often data federation middleware can be used to achieve the same objective. If done right, this semantic layer will present data to a report query builder in clear, descriptive, relevant, and easily recognizable business terms.
- **BI with search UI can address the I-don't-know-what-I-don't-know dilemma.** In addition to significantly reducing the need for training, a search UI adds another important self-service feature to BI applications. While reporting, ad hoc queries, and OLAP tools work best when one knows the exact business question, they fall short when a user is looking for something that he or she is not quite sure of. A salesperson getting ready for an important client meeting may not know all of the information required to prepare for the meeting and may not be able to effectively construct the appropriate queries to pull the information she might need. It works much better to enable this salesperson to simply enter a few keywords to find relevant customer dimensions in the database and then use a graphical interface to drill into the information she wants from a list of possibilities. So in addition to requiring little to no training, a search UI for BI effectively solves one of the oldest dilemmas in BI: having to know exactly which questions to ask to get a meaningful answer.
- **BI with search UI can also support faceted navigation.** Faceted navigation allows analysis on data structures that conventional OLAP tools can't easily provide. Classically modeled star schemas and conventional BI architectures are mainly designed to handle well and simply-structured data, but they usually struggle when data

structures are very complex and often require building multiple data marts as a result. For example, if the data structures hold unbalanced, ragged hierarchies (typical in retail or manufacturing where different products or part types do not share the same dimensions), a process must be invented to fill in missing hierarchy levels, which often results in an application that does not reflect reality. These ragged and unbalanced hierarchies are just too much of a headache for traditional BI and OLAP-type reporting and analysis. Certain data architectures (inverted index, associative databases) and BI with faceted-type search capabilities are required to analyze complex data structures with thousands of dimensions and complex hierarchies.

IT Requirements

IT will always insist (and rightfully so) that such a solution must:

- Support business/IT alignment.
- Support standards, vendor, and infrastructure consolidation and centralization initiatives.
- Support a single-version-of-truth objective.
- Leverage existing BI vendor investments, infrastructure, and training.
- Reduce operational risk by providing a secure, policy-compliant, and risk-free environment.
- Provide tangible ROI by:
 - Reducing, not increasing, IT resource requirements.
 - Implementing technologies that stop proliferation of applications and servers.

KEY RECOMMENDATIONS

The study yielded several important observations and recommendations.

Observations:

- There are several types of roles in organizations that rely increasingly on themselves, and less so on IT, for most of their information needs.
- In many cases, information needs for these knowledge workers are not fully addressed by earlier-generation BI applications. Some of the features missing in these older BI applications are an intuitive, search-like interface and semantic metalayers that require little to no training for business users.
- In most cases, information needs for these knowledge workers are fulfilled by homegrown BI applications such as spreadsheets or desktop-based file systems.
- Knowledge workers spend an inordinate amount of the workday looking for and not actually using the information.

Conclusions and recommendations:

- Knowledge workers will significantly benefit from a new generation of self-service — lean and agile — BI solutions that would allow these office workers to fulfill most of their information requirements while requiring minimal support from IT.
- Knowledge workers will significantly benefit from a BI solution that seamlessly integrates search and BI functionality.
- Knowledge workers will significantly benefit from a BI solution that provides an intuitive, search-like interface that requires little or no training.
- By making BI applications more intuitive and requiring little or no training, BI can penetrate a much broader base of knowledge workers in an enterprise.

Appendix A: Methodology

In this study, Forrester interviewed 30 professionals in multiple industries within the US, UK, India, and Singapore to evaluate the information usage requirements, patterns, and challenges of modern office workers. Survey participants included decision-makers in sales, marketing, finance, and IT roles: 24 business professionals and six IT professionals. Questions asked of the participants were around how they use information in their roles, what tools were used, and their interaction with IT (if business). Respondents were offered rewards points as a thank you for time spent on the survey. The study began and was completed in September 2009.

Appendix B: Supplemental Material

Related Forrester Research

“Trends 2011 And Beyond: Business Intelligence,” Forrester Research, Inc., March 31, 2011

“A Practical How-To Approach To Mobile BI,” Forrester Research, Inc., March 3, 2011

“Empower BI HEROes With Self-Service Tools,” Forrester Research, Inc., October 26, 2010

“Agile BI Out Of The Box,” Forrester Research, Inc., April 22, 2010

“BI In The Cloud? Yes, And On The Ground, Too,” Forrester Research, Inc., January 26, 2010

“Search + BI = Unified Information Access,” Forrester Research, Inc., May 5, 2008

“BI Workspaces: BI Without Borders,” Forrester Research, Inc., June 23, 2008

Appendix D: Endnotes

¹ “Trends 2011 And Beyond: Business Intelligence,” Forrester Research, Inc., March 31, 2011